

**Amendment to the Claims:**

The listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1-26. Cancelled.

27. (Currently Amended) A method for constructing a reservoir model representative of an underground reservoir, including discretizing said underground reservoir by a set of grid cells, and associating with said reservoir model a permeability field constrained by a priori geologic data and production data or pressure data obtained from well tests collected in said underground reservoir comprising:

- a) constructing an initial reservoir model including generating a permeability field in accordance with a stochastic model, coherent with the a priori geologic data;
- b) identifying zones inside said underground reservoir;
- c) calculating ~~effective permeabilities~~ of said zones and estimating simulated production data or simulated pressure data by carrying out, by means of a simulator, a simulation of fluid flows, to estimate corrections to be ~~brought~~ applied to said ~~effective permeabilities~~ in order to reduce a difference between said production data or pressure data obtained from well tests and said simulated production or simulated pressure data ~~to improve calibration in relation to said production data or pressure data obtained from well tests~~;

d) propagating said corrections to said set of grid cells of said reservoir model, by means of an iterative optimization process comprising minimizing a function which depends on said corrections, using a technique of gradual deformation of realizations of said stochastic model[.]; and

e) using said reservoir model, including said correction propagated to said set of grid cells, to develop said underground reservoir.

28. (Currently Amended) ~~A-The~~ method as claimed in claim 27, comprising using said reservoir model to develop an oil reservoir.

29. (Currently Amended) ~~A-The~~ method as claimed in claim\_27, wherein flow simulation is carried out by means of a streamline simulator, said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry and said zones are defined either manually or automatically from said flow simulator.

30. (Currently Amended) ~~A-The~~ method as claimed in claim\_27, wherein flow simulation is carried out by means of a streamline simulator and said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry.

31. (Currently Amended) ~~A-The~~ method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, ~~within a framework of well tests.~~

32. (Currently Amended) A-The method as claimed in claim 27~~28~~, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, ~~within a framework of well tests.~~

33. (Currently Amended) A-The method as claimed in claim 29, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, ~~within a framework of well tests.~~

34. (Currently Amended) A-The method as claimed in claim 30, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, ~~within a framework of well tests.~~

35. (Currently Amended) A-the method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones.

36. (Currently Amended) A-The method as claimed in claim 28, wherein at least one gradual deformation parameter is assigned to each of said zones.

37. (Currently Amended) A-The method as claimed in claim 29, wherein at least one gradual deformation parameter is assigned to each of said zones.

38. (Currently Amended) A-The method as claimed in claim 30, wherein at least one gradual deformation parameter is assigned to each of said zones.

39. (Currently Amended) A-The method as claimed in claim 31, wherein at least one gradual deformation parameter is assigned to each of said zones.

40. (Currently Amended) A-The method as claimed in claim 32, wherein at least one gradual deformation parameter is assigned to each of said zones.

41. (Currently Amended) A-The method as claimed in claim 33, wherein at least one gradual deformation parameter is assigned to each of said zones.

42. (Currently Amended) A-The method as claimed in claim 34, wherein at least one gradual deformation parameter is assigned to each of said zones.